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EXAMINER

HOLT, ANDRIAE M

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/594,782	Applicant(s) BELBACHIR ET AL.	
	Examiner ANDRIAE M. HOLT	Art Unit 1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/4/2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1, 10-15 and 17-44 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1, 10-15 and 17-44 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-302) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date <u>12/19/2011</u> . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

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DETAILED ACTION

Applicant's request for reconsideration of the finality of the rejection of the last Office Action is persuasive and, therefore, the finality of that action is withdrawn. The Final Action dated June 20, 2011 is hereby vacated.

This Office Action is in response to Applicant's amendments filed April 4, 2011. Claims 1, 10-15, and 17-44 are pending in the application. Claims 1, 10-15, and 17-43 have been amended. Claim 44 is newly added. Claims 1, 10-15, and 17-44 will presently be examined to the extent they read on the elected subject matter of record.

Status of the Claims

Rejections not reiterated from the previous Office Action are hereby withdrawn. The following rejections are either reiterated or newly applied. They constitute the complete set of rejections presently being applied to the instant application.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 10-15, 17-35, and 42-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "approximately" in claims 1, 10-15, 17-35, and 42-44 is a relative term which renders the claim indefinite. The term "approximately" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite

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degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "approximately" in claims 1, 10-15, 17-35, and 42-44 renders the weight percentage of eugenol, eugenol acetate, vanillin, carvacrol, and thymol indefinite. One of ordinary skill in the art could not ascertain and interpret the metes and bounds of the patent protection desired as to what limits "approximately" sets in determining the weight percentage of eugenol, eugenol acetate, vanillin, carvacrol, and thymol, for example, "approximately" could be in range of 2-11%, in one case and 13 to 15%, in another for the weight percentage of eugenol.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 15, 17-34, and 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vail et al. (US 2004/0009245).

Applicant's Invention

Applicant claims a decontaminating composition exhibiting at the same time bactericidal, fungicidal, and virucidal properties comprising as active components, eugenol, eugenol acetate, vanillin, carvacrol, and thymol. Applicant claims the active components are derived from clove, vanilla, oregano, savory, and thyme. Applicant claims the components are present in proportions of eugenol at least 12%, eugenol acetate-at least 3%, vanillin-at least 0.1%, carvacrol-at least 0.5%, and thymol-at least 0.5% by weight.

Determination of the scope of the content of the prior art (MPEP 2141.01)

Vail et al. teach concentrated vapors from botanical essential oils are inhaled to prevent, treat and cure infections of the respiratory pathogens causing Severe Acute Respiratory Syndrome ("SARS"). Vail et al. teach the essential oils have antiseptic properties, are safe to inhale, and include, but are not limited to, the essential oils from *Eucalyptus globulus*, *Melaleuca alternifolia*, *Eucalyptus citriodora*, and *Eucalyptus radiata*. Vail et al. further teach the antiseptic essential oils have selected antiviral, antibacterial, and antifungal properties (Abstract). Vail et al. teach that element 4 in figure 1, may be chosen to be any essential oil, or any mixture of essential oils, from those listed in the defined "List of Essential Oils" (page 7, paragraph 79). Vail et al. teach that in addition to mixtures of essential oils that may substitute for element 4 in FIG. 1 that have already been listed, element 4 may also be chosen to be any one of the following: any mixture of eucalyptus oil with tea tree oil; any mixture of eucalyptus oil with one or more other essential oils; any mixture of tea tree oil with one or more other

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essential oils; any mixture of eucalyptus oil, tea tree oil, with one or more other essential oils; any mixture of eucalyptus oil, tea tree oil, one or more essential oils, and distilled water; any mixture of (a) one or more components from eucalyptus oil, (b) one or more components from tea tree oil and (c) one or more components from any other essential oil. Vail et al. further teach that typical procedures in the art may be used to determine the optimum percentage mixtures of any of the above components to prevent colds, flus, and infections of the human respiratory system (page 15, paragraph 200). Vail et al. teach a list of "essential oils" that may be used in the formulations (page 15, paragraph 202). Vail et al. teach the list includes *Artemisia dracunculus* (Tarragon) (page 15, paragraph 214), *Carum carvi* (Caraway) (page 15, paragraph 220), *Cinnamomum camphora* (Camphor) (page 15, paragraph 223), *Cinnamomum zeylanicum* (Cinnamon Bark) (page 15, paragraph 224), *Citrus paradisi* (Grapefruit) (page 15, paragraph 234), *Citrus reticulata* (page 15, paragraphs 236-238), *Coriandrum sativum* (Coriander) (page 15, paragraph 240), *Eucalyptus radiata* (Eucalyptus radiata) (page 16, paragraph 250), *Eugenia caryophyllata* (Clove Bud) (page 16, paragraph 252), *Hyssopus officinalis* (Hyssop) (page 16, paragraph 259), *Juniperus communis* (Juniper, Berry) (page 16, paragraph 264), *Lavendula officinalis* (page 16, paragraph 271), *Lippia citriodora* (Lemon Verbena) (page 16, paragraph 274), *Melissa officinalis* (Melissa [Lemon Balm]) (page 16, paragraph 280), *Myristica fragrans* (Nutmeg) (page 16, paragraph 284), *Origanum compactum* (Oregano), *Origanum vulgare* (Oregano) (page 16, paragraphs 292 and 293), *Pimpinella anisum* (Anise) (page 16, paragraph 298), *Pinus nigra*, *pinaster* and *sylvestris* (Pine des Alpes) (page 16, paragraph 300),

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Rosmarinus officinalis (Rosemary) (page 16, paragraph 310), *Salvia officinalis* (Sage) (page 16, paragraph 312), *Satureia montana* (Savory) (page 16, paragraph 315), *Thymus vulgaris* (Thyme Linalol) and *Thymus vulgaris* (Thyme Thujanol) (page 16, paragraphs 324 and 325), *Vanilla Planifolia* (Vanilla) (page 16, paragraph 327) and *Zingiber officinale* (Ginger, CO2) (page 16, paragraph 329). Vail et al. teach various mixtures of essential oils on pages 24-26. Mixture 5, paragraphs 714-740 include one or more of the following mixed together: A. different varieties of Eucalyptus oil *Eucalyptus citriadora*, *Eucalyptus globulus*, *Eucalyptus radiata*, and *Eucalyptus smithii*; B. *Melaleuca alternifolia*; C. different varieties of Clove oil including *Eugenia caryophyllata* and *Syzygium aromaticum*; D. different varieties of Cinnamon including *Cinnamomum camphora* and *Cinnamomum zeylanicum*; E. different varieties of Oregano including *Origanum vulgare*; F. different varieties of Savory including *Satureia montana*; G. different varieties of Thyme including *Thymus satureioides*, *Thymus serpyllium*, *Thymus vulgaris*, and *Thymus zygis*; H. different varieties of Cajeput including *Melaleuca cajeputi*; I. different varieties of Geranium including *Pelargonium roseum* and *Pelargonium graveolens*; J. different varieties of Lavender including *Lavandula hybrida*, *Lavandula latifolia*, *Lavandula officinalis* var., and *Lavandula officinalis* var. vera; K. different varieties of Myrtle including *Myrtus communis*; L. different varieties of Niaouli including *Melaleucea quinquinervera*; M. different varieties of Petitgrain including *Citrus aurantifolia*, *Citrus aur. bigarade* and *Citrus arantium amara*; N. different varieties of Pine oil including *Pinus nigra*, *Pinus nigra*, *pinaster and sylvestris*, *Pinus sylvestris*, and Sea Pine; and O. different varieties of Tarragon including *Artemisia dracunculus*. An

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example of Mixture #5A is A. 25% by volume of *Eucalyptus globulus*; B. 10% by volume of *Eucalyptus citriodora*; C. 10% by volume of *Eucalyptus radiata*; D. 25% by volume of *Melaleuca alternifolia*; E. 2% by volume of *Eugenia caryophyllata*; F. 2% by volume of *Cinnamomun camphora*; G. 2% by volume of *Oreganum vulgare*; H. 2% by volume of *Satureia Montana*; I. 2% by volume of *Thymus vulgaris*; J. 10% *Melaleuca cajeputi*; and K. 10% *Lavendula officinalis*.

Vail et al. teach that as used herein, the list of essential oils defines specific essential oil. For example, the scientific name *Eucalyptus globulus* is the name given a specific tree. The leaves from that tree are typically steam distilled to make the essential oil from that tree. So the essential oil is made from the tree called *Eucalyptus globulus* (page 11, paragraph 330). Vail et al. further teach that similar comments apply to the other scientific names which can be used as the name of the species of the plant or tree, or as the name of the essential oil produced from the plant or tree (page 17, paragraph 330). Vail et al. teach that standard techniques have been used to measure the antipathogenic properties of essential oils with the test pathogen. Vail et al. teach that typically, a culture of bacteria is grown in a medium in a petri dish, and then filter paper is soaked in an essential oil is placed on top of the culture (page 18, paragraph 348). This teaching by Vail et al. is the biodecontaminant material and carrier wherein the decontamination composition is integrated in the carrier, paper.

***Ascertainment of the difference between the prior art and the claims
(MPEP 2141.02)***

Vail et al. do not explicitly disclose the specific weight ranges as claimed in independent claims 1 and 15 or specific working examples using vanillin as an essential

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oil in the formulations. Vail et al. do not explicitly disclose the eugenol, eugenol acetate, vanillin, carvacrol, and thymol are not contained in essential oil.

***Finding a prima facie obviousness
Rationale and Motivation (MPEP 2142-2143)***

It would have been obvious to one of ordinary skill in the art at the time of invention to use the teachings of Vail et al. and use the eugenol, eugenol acetate, vanillin, and carvacrol in the claimed ranges. One skilled in the art at the time the invention was made would have been motivated to use the essential oil components in the claimed weight ranges because Vail et al. teach that typical procedures in the art may be used to determine the optimum percentage mixtures of any of the components to prevent colds, flus, and infections of the human respiratory system. As such the skilled artisan would have been motivated to use the components in the ranges with a reasonable expectation of success. In addition, the adjustment of particular conventional working conditions (e.g., determining result effective amounts of the ingredients beneficially taught by the cited references) is deemed merely a matter of judicious selection and routine optimization which is well within the purview of the skilled artisan. Accordingly, this type of modification would have been well within the purview of the skilled artisan and no more than an effort to optimize results.

It would have been obvious to one of ordinary skill in the art at the time of invention to use the teachings of Vail et al. and use vanillin as an essential oil in the formulations. One skilled in the art at the time the invention was made would have been motivated to try vanillin in the formulation because Vail et al. teach a number of various compositions that can be used in the formulations. All of the formulations include the

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use of one or more of the essential oils that are listed as essential oils that can be used in the formulations. Vanillin is one of the essential oils that is included in the listing. In addition, in view of *In re Kerkhoven*, 205 USPQ 1069 (C.C.P.A. 1980), it is *prima facie* obvious to combine two or three compositions each of which is taught by prior art to be useful for the same purpose in order to form a third composition that is to be used for the very same purpose. The idea of combining them flows logically from their having been individually taught in prior art, thus claims that requires no more than mixing together two or more conventional essential oils that have are anti-microbial, anti-fungal, or anti-viral set forth *prima facie* obvious subject matter.

It would have been obvious to one of ordinary skill in the art at the time of invention to use the teachings of Vail et al. and know that eugenol, eugenol acetate, vanillin, carvacrol, and thymol sources used to gain essential oils are the same source as claimed in the instant application. Vail et al. specifically teach that the scientific names are used as the name of the species of the plant or tree, or as the name of the essential oil produced from the plant or tree to identify the source. Vail et al. provide formulation examples that use the essential oils that include the clove oil, such as, *Eugenia caryophyllata* and *Syzygium aromaticum*; oregano, such as, *Origanum vulgare*; and thyme, such as, *Thymus satureioides*, *Thymus serpyllium*, *Thymus vulgaris*, and *Thymus zygis*. Because these oils are derived from the same plants and plant parts that are claimed, it would have been *prima facie* obvious to the skilled artisan that whether the components were obtained from the essential oil portions or the plants

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themselves the expected results would be the same, treatment of infections of the respiratory system, a bactericidal composition, absent a showing of unexpected results.

Therefore, the claimed invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made because every element of the invention has been fairly suggested by the cited references.

Response to Arguments

Applicant's arguments filed April 4, 2011 have been fully considered but they are not persuasive. Applicant argues that Vail employs essential oils as the source of the components and this is in contrast to the decontaminating composition recited in the present claims, in which the active components are not contained in essential oils. In response to Applicant's arguments, eugenol, eugenol acetate, vanillin, carvacrol, and thymol sources used to gain essential oils in the prior art are the same source as claimed in the instant application, the plants. Vail et al. specifically teach that the scientific names are used as the name of the species of the plant or tree, or as the name of the essential oil produced from the plant or tree to identify the source. Vail et al. provide formulation examples that use the essential oils that include the clove oil, such as, *Eugenia caryophyllata* and *Syzygium aromaticum*; oregano, such as, *Origanum vulgare*; and thyme, such as, *Thymus satureioides*, *Thymus serpyllium*, *Thymus vulgaris*, and *Thymus zygis*. Because these oils are derived from the same plants and plant parts that are claimed, it would have been prima facie obvious to the skilled artisan that whether the components were obtained from the essential oil portions or the plants themselves the results would be the same, treatment of infections of the respiratory

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system, a bactericidal composition. Absent data to indicate that eugenol, eugenol acetate, vanillin, carvacrol, and thymol, not used as essential oil formulations provide unexpected results over eugenol, eugenol acetate, vanillin, carvacrol, and thymol essential oils, it would be prima facie obvious to the skilled artisan that these would provide the same results.

Applicant argues that Vail is primarily concerned with using eucalyptus oil and tea tree oil and indicates that the mixture could be “any mixture of essential oil”. Applicant argues that Vail provide no guidance to the person of ordinary skill in the art that would lead him or her to arrive at the claimed composition. In response to Applicant's argument, Vail provides many examples in which the claimed components are used in formulation. For example, Mixture #5A is A. 25% by volume of *Eucalyptus globulus*; B. 10% by volume of *Eucalyptus citriodora*; C. 10% by volume of *Eucalyptus radiata*; D. 25% by volume of *Melaleuca alternifolia*; E. 2% by volume of *Eugenia caryophyllata*, (clove); F. 2% by volume of *Cinnamomun camphora*; G. 2% by volume of *Oreganum vulagare* (oregano); H. 2% by volume of *Satureia Montana*; I. 2% by volume of *Thymus vulgaris* (thyme); J. 10% *Melaleuca cajeputi*; and K. 10% *Lavendula officinalis*. The only component not used in this formulation is vanillin. As stated in the rejection, it would have been prima facie obvious to use vanillin in the formulation in view of *In re Kerkhoven*, 205 USPQ 1069 (C.C.P.A. 1980). While Vail is concerned with the use of eucalyptus oil and tea tree oil, Applicant uses the transitional term “comprising”, which opens the composition to the inclusion of other components not specifically claimed in independent claim 1. Therefore, it would have been prima facie

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obvious to the skilled artisan that eucalyptus oil and tea tree oil can be used in the formulation especially since Applicant claims a composition comprising many other extracts of plants, including eucalyptus, see claim 34.

Applicant further argues that the composition of Vail is disclosed only as having virucidal properties. In response to Applicant's arguments, Vail teaches the use of the same components or plants that contain those components, eugenol, eugenol acetate, vanillin, carvacrol, and thyme, whether used as essential oil formulations or not. It is noted that compounds/compositions are inseparable from their properties. Therefore, the components would have bactericidal and fungicidal properties, as well. In addition, it is known in the art, that these components are bactericidal, fungicidal, and virucidal.

Claims 1 and 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meeker Publication (1998) in view of Bacca et al. (US 5,733,530) and Nabi et al. (US 5,472,684).

Applicant's Invention

Applicant claims a decontaminating composition exhibiting at the same time bactericidal, fungicidal, and virucidal properties comprising as active components, eugenol, eugenol acetate, vanillin, carvacrol, and thymol. Applicant claims the active components are derived from clove, vanilla, oregano, savory, and thyme. Applicant claims the components are present in proportions of eugenol at least 12%, eugenol acetate-at least 3%, vanillin-at least 0.1%, carvacrol-at least 0.5%, and thymol-at least 0.5% by weight.

***Determination of the scope of the content of the prior art
(MPEP 2141.01)***

Meeker teaches that the worldwide overuse of antibiotics has caused microorganisms to develop resistance to current antibiotics and to become more virulent. Meeker teaches that microorganisms, however, do not appear to develop tolerance or resistance to the antibacterial effects of essential oils such as clove oil (eugenol) and thyme oil (thymol) (Abstract). Meeker teaches eugenol is the main component of clove oil, which is obtained by pressing or distilling buds, leaves, and stems of the evergreen tree *Eugenia caryophyllata* (page 32, col. 2, paragraph 2). Meeker teaches the chemical analysis of clove oil yields up to 85% eugenol, 2% isoeugenol (nutmeg oil), 1% vanillin, and 1% methyl salicylate (page 34, col. 1, paragraph 2). Meeker teaches essential oils are valuable constituents of many dental medicaments (page 34, col. 1, paragraph 3). Meeker teaches thyme oil, which is derived from the aromatic mint shrub *Thymus vulgaris*, yields thymol (powder), and carvacrol as its major ingredients. Meeker teaches that thymol and carvacrol also may be obtained from caraway, oregano, rosemary, and savory. Meeker teaches that both thymol and carvacrol were used by dentist in the 19th century (page 35, col. 1, paragraph 1). Meeker teaches that thymol is recognized as a powerful antiseptic, germicide, fungicide, and counter-irritant and is currently used in several root canal materials (page 35, col. 2, paragraph 2). Meeker teaches that the following essential oils were tested for their germicidal activity: eugenol, thyme oil, eucalyptus oil, orange oil, and peppermint oil (page 35, col. 3, paragraph 5 and page 38, paragraph 1). Meeker

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teaches that because eugenol and thyme oil were the most active, an additional test was conducted to determine if the addition of thymol or carvacrol to eugenol would increase the germicidal action of ZOE (zinc oxide-eugenol). Meeker teaches the liquid portion consisted of two parts eugenol to one part thymol or two parts eugenol to one part carvacrol, isoeugenol and vanillin, the phenolic components of clove oil that are derived from eugenol were also tested to determine their germicidal action (page 38, paragraph 1). Meeker teaches the three components of clove oil (eugenol, isoeugenol, and vanillin) are germicidal and share a similar phenolic structure. A dental cement made of ZOE is germicidal, and its germicidal strength can be doubled by adding thymol and quadrupled by adding carvacrol, the liquid isomer of thymol (page 40, col. 1, paragraph 1). Meeker teaches thyme oil is the most germicidal essential oil. The addition of thymol or carvacrol to ZOE can benefit the patient in indirect pulp capping procedures because thymol and carvacrol are obtundant and palliative to the pulp (page 40, paragraph 2). Meeker further teaches vanillin is germicidal (page 40, paragraph 3). Meeker teaches the active components of the essential oils are best used dissolved in liquid monohydric phenols such as eugenol and carvacrol. The active phenolic components such as carvacrol, eugenol, isoeugenol, thymol, and vanillin possess marked germicidal properties against bacteria and fungi (page 40, col. 1, paragraph 6–col. 2).

***Ascertainment of the difference between the prior art and the claims
(MPEP 2141.02)***

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Meeker does not explicitly disclose the specific weight ranges as claimed in independent claims 1 and 15 or the use of at least one mineral salt in the formulation. It is for this reason Bacca et al. and Nabi et al. are joined as secondary references.

Bacca et al. teach tarter control dentifrice compositions that contain thymol (Abstract). Bacca et al. teach the oral compositions of the present invention may be in the form of a toothpaste, mouthrinse, and liquid dentifrice (col. 2, lines 12-13). Bacca et al. teach that the term "carrier materials" as used herein means any material safe and effective for use in the compositions including sodium bicarbonate (col. 2, lines 24-30).

Nabi et al. teach compositions comprising thymol and eugenol and optionally a sesquiterpenol alcohol, such as farnesol, has been found to have plaque and gingivitis effect (Abstract). Nabi et al. teach that water-soluble polishing agents, such as sodium bicarbonate, can also be used in the formulation. When sodium bicarbonate is present, plaque and caries reduction is improved (col. 3, lines 4-7). Nabi et al. teach that the data shows that among all the agents tested, thymol, eugenol and farnesol are most active against the dental plaque bacterium, *A. viscosus*. These data further show that a combination of thymol/eugenol and thymol/eugenol/farnesol provides more antibacterial activity against *A. viscosus* than the individual component (col. 4, lines 31-37).

***Finding a prima facie obviousness
Rationale and Motivation (MPEP 2142-2143)***

It would have been obvious to one of ordinary skill in the art at the time of invention to use the teachings of Meeker and Bacca et al. and Nabi et al. and use the eugenol, eugenol acetate, vanillin, and carvacrol in the claimed ranges. One skilled in the art at the time the invention was made would have been motivated to use the

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essential oil components in the claimed weight ranges as a matter of routine experimentation and optimization to provide an effective germicidal dental composition. As such the skilled artisan would have been motivated to use the components in the ranges with a reasonable expectation of success. In addition, the adjustment of particular conventional working conditions (e.g., determining result effective amounts of the ingredients beneficially taught by the cited references) is deemed merely a matter of judicious selection and routine optimization which is well within the purview of the skilled artisan. Accordingly, this type of modification would have been well within the purview of the skilled artisan and no more than an effort to optimize results.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Meeker, Bacca et al. and Nabi et al. and use at least one mineral salt in the dental formulations. Meeker teaches that dental compositions that contain eugenol, which contains vanillin and isoeugenol, combined with thymol and/or carvacrol, provide dental compositions that have marked germicidal properties against bacteria and fungi. One skilled in the art at the time the invention was made would have been motivated to add a mineral salt, such as sodium bicarbonate, to the formulations because these are known carriers used to prepare formulations in the dental art as evidenced by the teachings of Bacca et al. and Nabi et al. The skilled artisan would have been motivated to add these to dental formulations that contain eugenol, thymol, vanillin, and carvacrol with a reasonable expectation of success because Nabi et al. teach that the addition of sodium bicarbonate provides an

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improvement in the reduction of plaque and caries in formulations that contain eugenol and thymol, two of the main components disclosed in the instant application.

Therefore, the claimed invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made because every element of the invention has been fairly suggested by the cited references.

Claims 1 and 36-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meeker Publication (1998) in view of Thakare Thesis (2004).

Applicant's Invention

Applicant claims a decontaminating composition exhibiting at the same time bactericidal, fungicidal, and virucidal properties comprising as active components, eugenol, eugenol acetate, vanillin, carvacrol, and thymol. Applicant claims the active components are derived from clove, vanilla, oregano, savory, and thyme. Applicant claims the components are present in proportions of eugenol at least 12%, eugenol acetate-at least 3%, vanillin-at least 0.1%, carvacrol-at least 0.5%, and thymol-at least 0.5% by weight. Applicant claims a method of producing a decontaminating composition.

Determination of the scope of the content of the prior art (MPEP 2141.01)

The teachings of Meeker with respect to the 35 U.S.C. 103(a) rejection is hereby incorporated and are therefore applied in the instant rejection as discussed above.

Ascertainment of the difference between the prior art and the claims (MPEP 2141.02)

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Meeker does not explicitly disclose the method of disclosed in claim 36 to produce the decontamination composition. It is for this reason Thakare is joined as a secondary reference.

Thakare teaches that seven medicinal plants including *Thymus vulagaris* leaves (Thyme) and *Syzgium aromaticum* fruits (cloves) were utilized because these plants have previously been reported to have antibacterial activity against different bacterial strains (page 14, Selection of medicinal plants for this study). Thakare teaches in the preparation that after drying at 37° C for 14 hours the plant material was ground in a grinding machine (page 14, preparation of extracts, paragraph 1). Thakare teaches the extraction of the selected plant material powder was done by the maceration method (page 14, Extraction of selected plant material powder by maceration method).

***Finding a prima facie obviousness
Rationale and Motivation (MPEP 2142-2143)***

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Meeker and Thakare and use the method taught by Thakare to prepare the compositions. One skilled in the art at the time the invention was made would have been motivated to use the method as disclosed by Thakare which includes the steps of grinding or pressing the plant material and extracting the oils by the maceration method because Meeker teaches that eugenol, the main component of clove oil, is obtained by pressing or distilling buds, leaves, and stems of the evergreen tree *Eugenia caryophyllata* (clove). In addition, the skilled artisan would have been motivated to use known techniques in the art, such as the technique disclosed by

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Thakare, to extract the essential oils from the plant material as a matter of routine experimentation.

Therefore, the claimed invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made because every element of the invention has been fairly suggested by the cited references.

Response to Arguments

Applicant's arguments filed April 4, 2011 have been fully considered but they are not persuasive. Applicant argues that Meeker employs essential oils as the source of the components and this is in contrast to the decontaminating composition recited in the present claims, in which the active components are not contained in essential oils. In response to Applicant's argument, eugenol, eugenol acetate, vanillin, carvacrol, and thymol sources used to gain essential oils in the prior art are the same source as claimed in the instant application, the plants. Meeker teaches eugenol is the main component of clove oil, which is obtained by pressing or distilling buds, leaves, and stems of the evergreen tree *Eugenia caryophyllata*. Meeker teaches the chemical analysis of clove oil yields up to 85% eugenol, 2% isoeugenol (nutmeg oil), 1% vanillin, and 1% methyl salicylate. Meeker teaches thyme oil, which is derived from the aromatic mint shrub *Thymus vulgaris*, yields thymol (powder), and carvacrol as its major ingredients. Meeker teaches that thymol and carvacrol also may be obtained from caraway, oregano, rosemary, and savory. Because these oils are derived from the same plants and plant parts that are claimed, it would have been prima facie obvious to the skilled artisan that whether the components were obtained from the essential oil

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portions or the plants themselves the results would be the same, treatment of infections of the respiratory system, a bactericidal composition. Absent data to indicate that eugenol, eugenol acetate, vanillin, carvacrol, and thymol, not used as essential oil formulations provide unexpected results over eugenol, eugenol acetate, vanillin, carvacrol, and thymol essential oils, it would be *prima facie* obvious to the skilled artisan that these would provide the same results.

Applicant argues that none of the combinations taught by Meeker include additional relevant components. In response to Applicant's argument, Meeker teaches that dental compositions that contain eugenol, which contains vanillin and isoeugenol, combined with thymol and/or carvacrol, provide dental compositions that have marked germicidal properties against bacteria and fungi. While Meeker does not provide specific examples that show the use of vanillin, it would have been obvious to the skilled artisan that these combinations could be made and provide the same marked germicidal properties. In view of *In re Kerkhoven*, 205 USPQ 1069 (C.C.P.A. 1980), it is *prima facie* obvious to combine two or three compositions each of which is taught by prior art to be useful for the same purpose in order to form a third composition that is to be used for the very same purpose. The idea of combining them flows logically from their having been individually taught in prior art, thus claims that requires no more than mixing together two or more conventional essential oils that have are anti-microbial, anti-fungal, or anti-viral set forth *prima facie* obvious subject matter.

Applicant argues that Meeker teaches away from the claimed invention because it teaches that thymol is the most active of the relevant components. In response to

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Applicant's argument, the adjustment of particular conventional working conditions (e.g., determining result effective amounts of the ingredients beneficially taught by the cited references) is deemed merely a matter of judicious selection and routine optimization which is well within the purview of the skilled artisan. Therefore, absent a showing of unexpected results, this modification is well within the purview of the skilled artisan and not more than an effort to optimize results.

Applicant argues that Thakare's extraction methods, leads away from what is set forth in claims 36-41, since ethanol is the extraction fluid. Applicant argues that Thakare leads away from using an aqueous solution for maceration. One skilled in the art at the time the invention was made would have been motivated to use the method as disclosed by Thakare which includes the steps of grinding or pressing the plant material and extracting the oils by the maceration method because Meeker teaches that eugenol, the main component of clove oil, is obtained by pressing or distilling buds, leaves, and stems of the evergreen tree *Eugenia caryophyllata* (clove). In addition, the skilled artisan would have been motivated to use known techniques in the art, such as the technique disclosed by Thakare, to extract the essential oils from the plant material as a matter of routine experimentation. The selection of water or ethanol as the extraction fluid is a matter of routine experimentation and optimization, as it is a known practice in the art to use either solvent in the maceration technique for essential oil.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andriae M. Holt whose telephone number is (571)272-9328. The examiner can normally be reached on 7:00 am-4:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richter Johann can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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